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ABSTRACT

Much research and many publications have dealt with the concepts of rural-urban differences, but the controversy regarding the conceptual clarity of the variables remains. Assuming that these variables need clarification, this paper: (1) examines some of the conceptual and methodological problems involved in rural-urban differentiation, (2) proposes a multidimensional continuum and typology, and (3) tests the empirical utility of this continuum and typology. Using the Wirth-Redfield conceptual framework, these criteria were adopted within a given spatial-temporal context: an urban center, in contrast to a rural one, is characterized by larger size, greater density, and a preponderance of persons engaged in nonagricultural economic activities. In this definition, the demographic dimensions of size and density of population, and the occupational dimension indicating cultural differences are emphasized. There were 18 measures of urbanization employed--11 unidimensional and 7 multidimensional. All of these measures were then correlated with four dependent variables--fertitlity ratio, average number of persons per household, divorce rate, and income differences between professionals and laborers. A rural-urban typology was then developed, based on three major variables--size, density, and heterogeneity. The typological method of analysis compared favorably with the continuum analysis of rural-urban variations. Additional testing with a Profile of Types of Rural Counties gave further evidence of the empirical utility of a typological analysis of rural-urban differences. (KM)

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A RURAL-URBAN TYPOLOGY[1]

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Much research and many publications have appeared dealing with the concepts of rural - urban differences, but the controversy regarding the conceptual clarity of the rural - urban variables remains. The lack of agreement among sociologists regarding the criteria by which "rural" and "urban" are differentiated seriously affects the study of this dimension of social life. Traditionally, small, isolated homogeneous and economically independent communities are considered "rural" and those communities with large heterogeneous populations and complex technologies are considered urban. But with the rapid changes in modern societies, many researchers have noted the convergence of rural and urban ways of life, and "an increasing degree of interdependence between the city and the countryside" (Fugitt, 1963;257).

These discoveries indicate either that rural - urban differences are no longer salient variables of social life or that the variables themselves need clarification. We here assume the latter. Many social scientists have identified some of the more crucial conceptual and empirically measurable differences involved (e.g. Wirth, 1938; Redfield, 1941; Duncan, 1957; Dewey, 1960; Hauser, 1965; Morris, 1968; Gans, 1962; Lewis, 1965; Sjoberg, 1964; Gibbs and Martin, 1962; et.al.) Various approaches have been tried, yet the need for conceptual and methodological refinement remains. The objectives of this paper are: (1) to examine some of the conceptual and methodological problems involved in rural - urban differentiation (2) to propose a multidimensional continuum and typology and (3) to test the empirical utility of this continuum and typology.

Rural - Urban Differentiation

In the early social science literature, the study of rural - urban patterns was considered to be very significant. Most of the well-known sociologists were occupied, in one way or another, with an attempt to explain the differences in the social life of rural and urban societies. Maine's (1930) status and contract, Tonnies' (1940) Gemeinschaft and Gesellschaft, Durkheim's (1947) organic and mechanical solidarity and Becker's (1950) sacred and secular dichotomies are attempts to explicate the essential nature of the urbanization phenomena. They sought to answer

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the question, "What are the organizational, cultural and psychological consequences and accompaniments of the transformation of a society from a rural situation to an urban one?"

In their pursuit of the same question, Sorokin and Zimmerman (1929), Wirth (1938), Redfield (1941, 1947), Smith (1947), and Loomis (1957) employed multiple criteria in distinguishing between rural and urban communities. Sorokin and Zimmerman (1929: 13-58), for example, delineated rural and urban communities on the basis of the following criteria: (1) occupational differences, (2) differences in community size, (3) differences in density of population, (4) environmental differences, (5) differences in social differentiation, (6) differences in social stratification, (7) differences in social mobility, (8) differences in social interaction, and (9) differences in social solidarity.

While the Sorokin-Zimmerman formulation is more descriptive than analytical, the Wirth-Redfield framework is drawn from the theoretical and empirical studies of Park (1952), in which the city is the independent variable explaining various other social and cultural variables. Wirth (1938) distinguished the city from the rural community by greater size, density, and heterogeneity of the population. The city's development is accompanied by the emergence of a secular order, a breakdown in the traditional normative fabric of everyday experience, and the rise of formal group relations and controls. Urbanism is a way of life and it involves a more fluid and mobile existence.

On the other hand, Redfield characterized the rural or "folk" society as "small, isolated, nonliterate, and homogeneous with a strong sense of group solidarity" (1947:297). The people of these societies have a relatively simple division of labor and technology. Behavior is more intimate and personal and strongly patterned by conventional religious and familial values.

Besides the multi-criteria approaches discussed here, there are also many other single-criterion approaches. More often than not, the single-criterion employed in rural-urban differentiation is community size (e.g. Browning, 1962; Duncan and Reiss, 1956; Schnore, 1961; Tisdale, 1942; et.al.) This approach provides an easy measurement to distinguish among communities, but it also has several weaknesses and invites many criticisms.

Perhaps the most severe criticism launched against these rural-urban studies is that the basis of differentiation, whether multi-criteria or single-criteria, must be examined in the context of a given cultural system, and hence, most of the criteria of differentiation are not uniformly interpretable. Lewis (1951) criticized Redfield particularly, while Pocock (1960) challenges the entire field of rural-urban studies on this point. Although Dewey (1960) treats rural-urban differences in simple demographic terms, he strongly recommends the use of cultural variables in the differentiation analysis.

These criticisms raise serious questions about the validity and utility of the rural-urban concept in cross-cultural and historical studies. At the operational level, the rural-urban variable should focus

on the measure which is most appropriate to the time and the place situation of communities and on the interrelationship of rural and urban places within a society.

Sjoberg (1964) provides a basis for the analysis of rural-urban patterns in three "constructed historical types" of societies, where the major "explanatory variable" considered is technology. He views increasing urbanization as a result of changes in a society's technology; from human energy to animal energy to inanimate energy.

Bealer, Willits and Kuvlesky (1965) examine three components of "rurality," namely, "ecological, occupational and socio-cultural," and suggest a composite definition. These writers further encourage the development of a multifactor measurement, considering these aspects of rurality.

Kaufman and Singh (1969) indicate that the universality of the concept is to be seen in terms of the "demographic, social and cultural dimensions." They suggest that there is a need for a universally applicable empirical measure, which should, originally, be constructed on the demographic dimension of size and density of population. Then, the measurement should be expanded to incorporate the other relevant correlates, especially those of cultural and social significance, within a clearly identified time and place context. Cultural correlates are to be seen in the level of technology and the accompanying standards of production and consumption. The social dimensions are to be seen in the community, organizational and role structures of the society.

With this background, a more satisfactory definition of the rural-urban continuum, based on multiple criteria, can be examined in this study. We first want to emphasize the empirical reality of the gradation from the relatively small, isolated village, through the larger village, to the market town, the small city, the larger city and finally to the metropolitan community. The position taken here is "rural and urban" rather than "rural or urban."

An urban center, in contrast to a rural one, is characterized by larger size, greater density, and a preponderance of persons engaged in non-agricultural economic activity. Its population is also better educated. In this definition, the demographic dimensions of size and density of population, the occupational dimension indicating cultural differences, are emphasized. These criteria appear to satisfy, to some extent, the suggestions of the proponents of a universally applicable concept of the rural-urban continuum.

In an attempt to construct a continuum and typology which would satisfy the requirements of a universal measure, we re-examined the Wirth-Redfield conceptual framework, and adopted the above criteria within a given spatial-temporal context.

Empirical Test of Continuum and Typology

Using the theories of Redfield and Wirth, we developed several unidimensional and multidimensional measures of urbanization. With these we

were able to examine the rural-urban phenomenon as a continuum and also as a typology. We chose to limit our study to limit our study to the state of Tennessee, simply because it is the state of our residence. We used the county as the geo-political unit of analysis, because it is highly variable on the rural-urban continuum. Some counties have no community of 2,500 or more and some counties are completely urbanized. Their boundaries have also remained fairly stable through the years, enabling us to consider the longitudinal or temporal aspect of urbanization. (See Bonjean, Browning & Carter, 1969.)

All together there were 18 measures of urbanization employed, eleven unidimensional measures and seven multidimensional measures. Three of the eleven unidimensional measures were measures of occupational heterogeneity. The correlation matrix of all 18 of these measures (See Table I) shows a significant correlation of each with all the others. We then correlated all of these measures with four dependent variables (Fertility Ratio, Average number of persons per household, Divorce Rate and Income differences between Professionals and Laborers) and found that of the unidimensional measures, the percent males college educated was the most important (See Table II). Of the seven multidimensional measures the 3MUR:1970 seemed to be slightly better. (See Tables III and IV.) This is an ordinal measure which combines size, density and occupational heterogeneity (measured by the White Collar/Blue Collar Ratio.) It might be noted here that there seems to be little gained by using multidimensional measures instead of unidimensional, when doing continuum analysis.

We then developed a rural-urban typology based on the three major variables emphasized by Louis Wirth, size, density and heterogeneity. Our typology considers demographic changes as well as population characteristics at a given point in time. First, we classified counties according to changes in population density and in the occupational structure from 1950-1970. Dichotomizing these two variables yielded a matrix of four types. (See Urbanization Typology Diagram.) We then divided the counties into three groups according to population size in 1970. We now have two typologies: one based on rural-urban changes and the other based on a static rural-urban condition. When these two typologies are combined, they yield a twelve cell matrix of twelve types of counties. (See Rural-Urban Typology.)

This typology promised to be more useful than a simple continuum, because it provides a framework to examine both change and status and because it identifies those geo-political units that deviate from the regression line of the continuum. To test the empirical utility of the typology we computed a number of analysis of variance tests of the several categories of Tennessee Counties. We found the F ratio to be significant at the .001 level of probability for nine dependent variables: Percent aged 18-64, Percent 65 and over, Fertility Ratio, Percent migrants (those whose residence was in another county or state in 1965), Income difference between professionals and laborers, Percent born out of state, Percent males college educated, Divorce rate and Percent Non-Whites.

Our question now is, which is the most useful, the continuum or the typology? To answer that question we correlated size, density and occupational heterogeneity and the multidimensional measure, 3MUR:1970, with

some of these dependent variables. We then computed the r^2 of each correlation and compared it with the Correlation Ratio (E^2) of the typology analysis of variance test. This can be done since both statistics have the same interpretation, the proportionate reduction of error. For example, both the 3MUR:1970 multidimensional measure of urbanization and the rural-urban typology explain about 26 percent of the variation in divorce rates among Tennessee counties. In Table V we see that the proportionate reduction of error of the typology in most cases is greater than that of the continuum measures. E^2 is considerably greater than the r^2 of the most often used measure of urbanization, population size. Therefore, the typological method of analysis compares favorably with the continuum analysis of rural-urban variations.

Since we are here primarily interested in rural counties, we reshuffled our counties and reclassified them using different boundaries for the rural counties, including all those with populations of less than 50,000. Over 86 percent of the counties of Tennessee (82) were then classified as rural. Only five counties had a population of more than 100,000 and only eight had 50,000 to 100,000. When located on the Urbanization Typology matrix, we found these 82 counties a little more evenly distributed. (See Typology of Rural Counties.)

Once again we computed a series of analysis of variance tests to check the empirical utility of the typology. We found the F ratio to be significant at the .001 level of probability for the variables: Percent migrants, and Percent males college educated. The F ratio was significant at the .01 level of probability for the variables: Percent under 18, Percent 18-64, Percent 65 and over, Percent born out of state, and Income differences between professionals and laborers. Finally, the F ratio was significant at the .05 level of probability for the variables: Fertility Ratio and Divorce Rate.

In order to get a better picture of the ways in which these types of rural counties differ from one another we plotted their position on nine of these dependent variables in a line graph. Using the mean of all 95 counties as the base line of comparison and the standard deviation as the measure of their variation from one another, we then plotted the mean of each type on the graph. (See Profile of Rural Counties.) The type which deviates most drastically from the others is the Urbanizing Rural Counties. These counties have more people in the 18-64 age category and less in the under 18 and 65 and over categories. They have a lower fertility ratio and a larger percentage of their population born out of state and a larger percentage are migrants. Educational and income differences are greater and divorce rates are higher.

This Profile of Types of Rural Counties gives further evidence of the empirical utility of a typological analysis of rural-urban differences. It enables us to identify some of the more subtle variations of counties and communities, variations not perceptible in a continuum analysis and certainly not observable in a dichotomous analysis.

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Table I

ZERO ORDER CORRELATION MATRIX OF MEASURES OF URBANIZATION: TENNESSEE COUNTIES, 1970

Measures of Urbanization	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Population Size																		
2. Population Density	.962	-																
3. MID	.561	.576	-															
4. % Born out of State	.549	.564	.614	-														
5. % Males College Ed.	.561	.596	.710	.744	-													
6. Percent Urban	.615	.651	.710	.616	.762	-												
7. 5MUR:1970	.544	.543	.782	.744	.843	.699	-											
8. Redfield MUR	.487	.538	.851	.796	.846	.793	.837	-										
9. Wirth MUR	.496	.546	.857	.651	.778	.808	.794	.944	-									
10. W/BR	.696	.727	.834	.690	.929	.814	.805	.846	.824	-								
11. D/PR	.758	.753	.894	.652	.711	.741	.725	.769	.776	.836	-							
12. 3MUR:1970	.489	.544	.787	.646	.794	.838	.783	.935	.981	.837	.729	-						
13. 2MUR:1970	.743	.779	.852	.705	.898	.836	.816	.865	.851	.987	.865	.865	-					
14. Population Increase 50-70	.967	.908	.492	.507	.486	.544	.477	.421	.419	.616	.703	.416	.669	-				
15. Density Increase 50-70	.945	.967	.550	.565	.587	.638	.531	.522	.522	.708	.725	.525	.762	.941	-			
16. W/BR Increase 50-70	.477	.483	.796	.501	.772	.600	.688	.722	.708	.824	.719	.711	.817	.446	.497	-		
17. 3MUR:50-70	.471	.525	.691	.537	.752	.701	.710	.766	.779	.784	.646	.807	.806	.464	.587	.768	-	
18. 2MUR:50-70	.845	.862	.764	.620	.775	.718	.696	.708	.700	.878	.834	.704	.908	.826	.891	.838	.772	-

GLOSSARY OF MEASURES

MID: Measure of Industrial Diversification (Gibbs & Martin, 1961).

5MUR:1970: Five Variable Multidimensional Measure of Urbanization (Population size, density, MID, % Born out of State, % Born out of State, % Males College Educated.) Estimated % Urban of each county from multiple correlation regression equation using five variables.

Redfield MUR: Redfield Multi-dimensional Measure of Urbanization (Population density, % Born out of State, % Males College Educated, MID.) Sum of ranks of county on each of these four variables.

Wirth MUR: Wirth Multi-dimensional Measure of Urbanization (Population size, density and MID.) Sum of ranks of each county on each of these three variables.

W/BR: White Collar/Blue Collar Ratio.

$$= \frac{\text{number of White Collar Workers}}{\text{number of Blue Collar Workers}} \times 100$$

D/PR: Distribution/Production Ratio

$$= \frac{\text{number of workers in distribution industries}}{\text{number of workers in production industries}} \times 100$$

3MUR:1970: Three Variable Multi-dimensional Measure of Urbanization (population size, density and W/BR.) Sum of ranks of each county on these three variables.

2MUR:1970: Two Variable Multi-dimensional Measure of Urbanization (population density, % White Collar Workers.) Estimated % urban of each county from multiple correlation regression equation, using these two variables.

3MUR:50-70: Three Variable Multi-dimensional Measure of Urbanization, 1950 to 1970 (Population size, density, and W/BR change from 1950 to 1970.) Sum of ranks of each county on each of these three variables.

2MUR:50-70: Two Variable Multi-dimensional Measure of Urbanization (Population Density and W/BR change from 1950-1970.) Estimated % urban in 1970 of each county from multiple correlation regression equation, using these two variables.

TABLE II

ZERO ORDER CORRELATION COEFFICIENTS OF SOCIAL MEASURES AND THE MEASURES OF URBANIZATION: TENNESSEE COUNTIES, 1970

Members of Urbanization	Fertility Ratio	X Persons per household	Divorce Rate	Income Difference
1 Population Size	-.198	-.034	.166	.382*
2 Population Density	-.239	-.069	.234	.407*
3 MID	-.166	-.014	.288*	.560*
4 % Born out of State	-.257	-.059	.268*	.507*
5 % Males College Ed.	-.401*	-.124	.347*	.761*
6 Percent Urban	-.343*	-.239	.432*	.637*
7 5MUR:1970	-.279	-.051	.351*	.654*
8 Redfield MUR	-.304*	-.107	.419*	.676*
9 Wirth MUR	-.255	-.070	.468*	.653*
10 W/BR	-.375*	-.127	.387*	.678*
11 D/PR	-.220	-.035	.291*	.522*
12 3MUR:1970	-.315*	-.125	.519*	.679*
13 2MUR:1970	-.369*	-.133	.419*	.667*
14 Population Increase	-.168	-.008	.115	.333*
15 Density Increase	-.216	-.042	.233	.405*
16 W/BR Increase	-.218	-.028	.209	.594*
17 3MUR:50-70	-.324*	-.117	.397*	.554*
18 2MUR:50-70	-.250	-.011	.257	.567*

*p<.01

TABLE III

THREE-DIMENSIONAL MEASURE OF URBANIZATION AND INCOME DIFFERENCES OF PROFESSIONALS AND LABORERS: TENNESSEE COUNTIES, 1970

Income Differences	Urbanization (3MUR:1970)				
	Low	M. Low	M. High	High	Total
$1,340 - 3,599	60.0% (15)	28.9% (7)	8.0% (2)	4.0% (1)	100.0% (25)
$3,600 - 4,249	20.8% (5)	37.5% (9)	41.7% (10)	0.0% (0)	100.0% (24)
$4,250 - 5,149	8.7% (2)	34.8% (8)	30.4% (7)	26.1% (6)	100.0% (23)
$5,150 - 8,250	8.7% (2)	0.0% (0)	21.7% (5)	69.6% (16)	100.0% (23)
Total	25.3% (24)	25.3% (24)	25.3% (24)	24.2% (23)	100.0% (95)

Gamma = .71

TABLE IV

THREE-DIMENSIONAL MEASURE OF URBANIZATION AND DIVORCE RATE: TENNESSEE COUNTIES, 1970

Divorce Rate	Urbanization (3MUR:1970)				
	Low	M. Low	M. High	High	Total
0.0 - 2.5	52.0% (13)	32.0% (8)	16.0% (4)	0.0% (0)	100.0% (25)
2.6 - 3.4	26.1% (6)	21.7% (5)	30.4% (7)	21.7% (5)	100.0% (23)
3.5 - 4.1	12.5% (3)	29.2% (7)	29.2% (7)	29.2% (7)	100.0% (24)
4.2 - 6.4	8.7% (2)	17.4% (4)	26.1% (6)	47.8% (11)	100.0% (23)
Total	25.3% (24)	25.3% (24)	25.3% (24)	24.2% (23)	100.0% (95)

Gamma = .53

TYPOLOGY OF URBANIZATION:
TENNESSEE COUNTIES,
1950-1970

Increase in White Collar Blue Collar Ratio	Population Density		
	Decrease and No Change	Increase	Total
Below Mean 0-18.33	Declining n = 35	Growing n = 17	n = 52
Above Mean 18.34-45.0	Differentiating n = 13	Urbanizing n = 30	n = 43
Total	n = 48	n = 47	n = 95

RURAL-URBAN TYPOLOGY:
TENNESSEE COUNTIES, 1970

Urbanization 1950-1970	Population of County 1970			
	3,000-19,999	20,000-99,999	100,000 & Over	Total
Declining	Declining Rural N = 27	Declining Medium n = 8	Declining Urban n = 0	n = 35
Differentiating	Differentiating Rural n = 8	Differentiating Medium n = 5	Differentiating Urban n = 0	n = 13
Growing	Growing Rural n = 8	Growing Medium n = 9	Growing Urban n = 0	n = 17
Urbanizing	Urbanizing Rural n = 2	Urbanizing Medium n = 23	Urbanizing Urban n = 5	n = 30
Total	n = 45	n = 45	n = 5	n = 95

TABLE V

URBANIZATION MEASURES AND RURAL - URBAN TYPOLOGY AN
THE PROPORTIONATE REDUCTION OF ERROR IN
PREDICTING VARIATION IN DEPENDENT VARIABLES:
TENNESSEE COUNTIES, 1970

Dependent Variables	r^2				E^2
	Pop. Size	Pop. Density	W/B Ratio	3MUR 1970	Tupology
Percent Under 18	.002	.000	.000	.000	.152
Percent 18-64	.048	.089	.162	.156	.370
Percent 65 & over	.103	.132	.232	.231	.274
Fertility Ratio	.039	.056	.140	.099	.314
Percent Migrants	.021	.029	.193	.151	.327
Income Difference	.146	.166	.459	.462	.450
Percent Born Out of State	.301	.319	.476	.418	.484
Percent Males College Educ.	.315	.355	.862	.631	.678
Divorce Rate	.028	.055	.149	.269	.262

TYPOLOGY OF RURAL COUNTIES:
TENNESSEE, 1970

Increase in the W/BR 1950-1970	Increase in Population Density 1950-1970	
	No Change or Decrease	Increase
Below the Mean	DECLINING (n = 34)	GROWING (n = 17)
Above the Mean	DIFFERENTIATING (n = 14)	URBANIZING (n = 17)

PROFILE OF RURAL COUNTIES: TENN. 1970